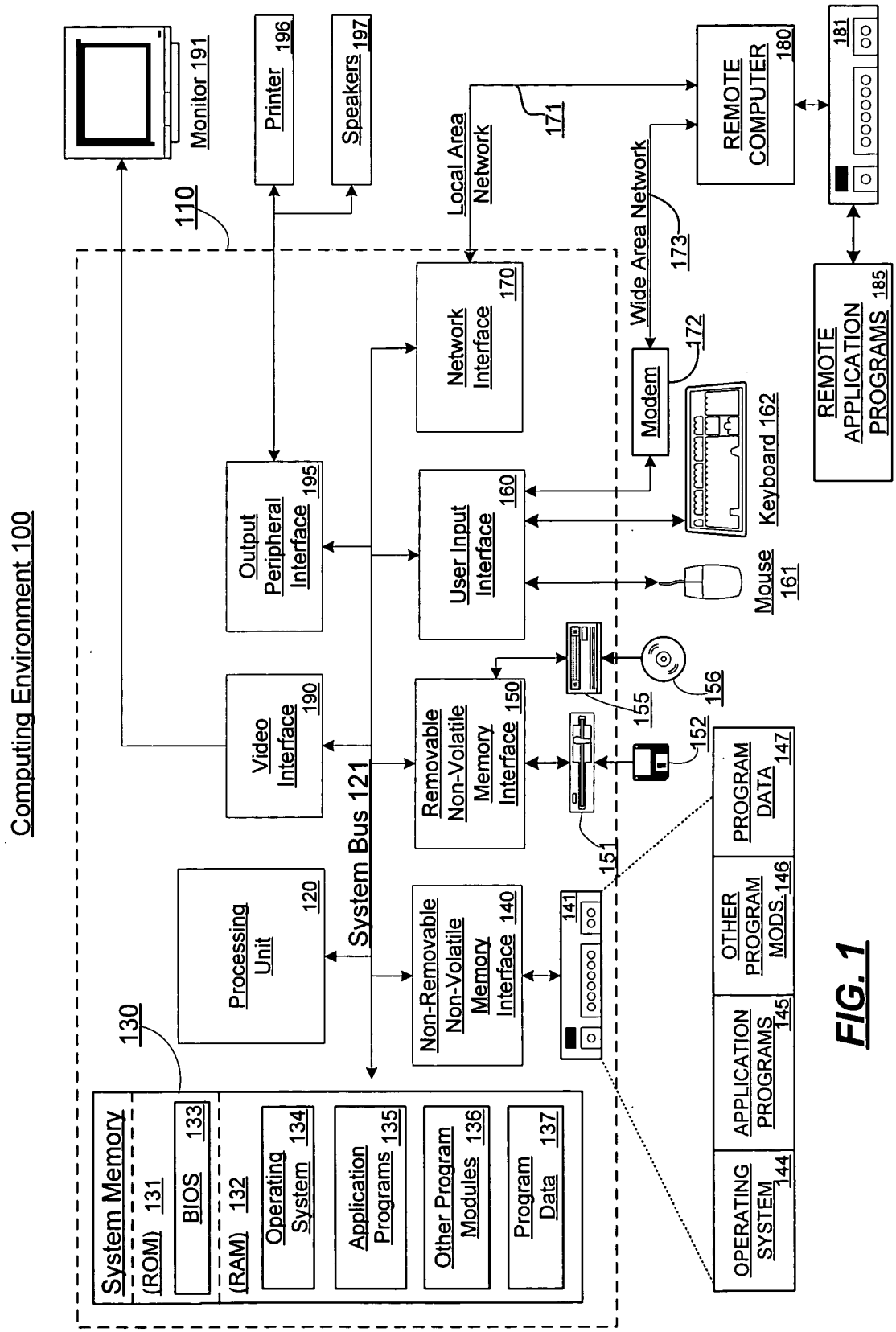
Computing Environment 100
110
Monitor 191
Printer 196
Speakers 197
Local Area Network
171
REMOTE COMPUTER 180
181
Wide Area Network
173
Network Interface 170
Modem 172
REMOTE APPLICATION PROGRAMS 185
Output Peripheral Interface 195
User Input Interface 160
Keyboard 162
Mouse 161
Video Interface 190
Removable Non-Volatile Memory Interface 150
155
156
152
151
System Bus 121
Processing Unit 120
Non-Removable Non-Volatile Memory Interface 140
141
130
System Memory
(ROM) 131
BIOS 133
(RAM) 132
Operating System 134
Application Programs 135
Other Program Modules 136
Program Data 137
OPERATING SYSTEM 144
APPLICATION PROGRAMS 145
OTHER PROGRAM MODS. 146
PROGRAM DATA 147

FIG. 1

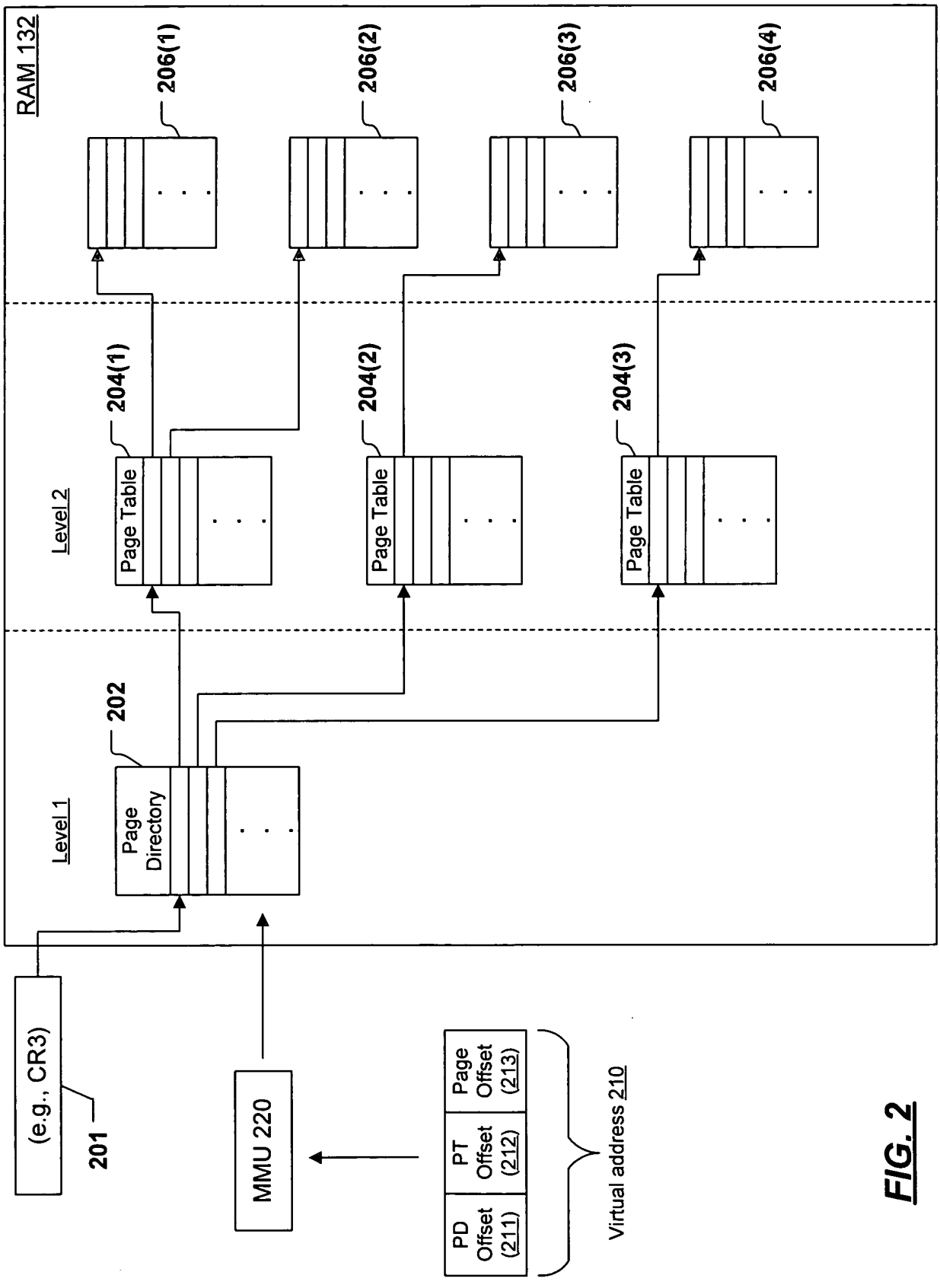
RAM 132
206(1)
206(2)
206(3)
206(4)
Level 2
204(1)
204(2)
204(3)
Page Table
Page Table
Page Table
Level 1
202
Page Directory
(e.g., CR3)
201
MMU 220
PD Offset (211)
PT Offset (212)
Page Offset (213)
Virtual address 210

FIG. 2

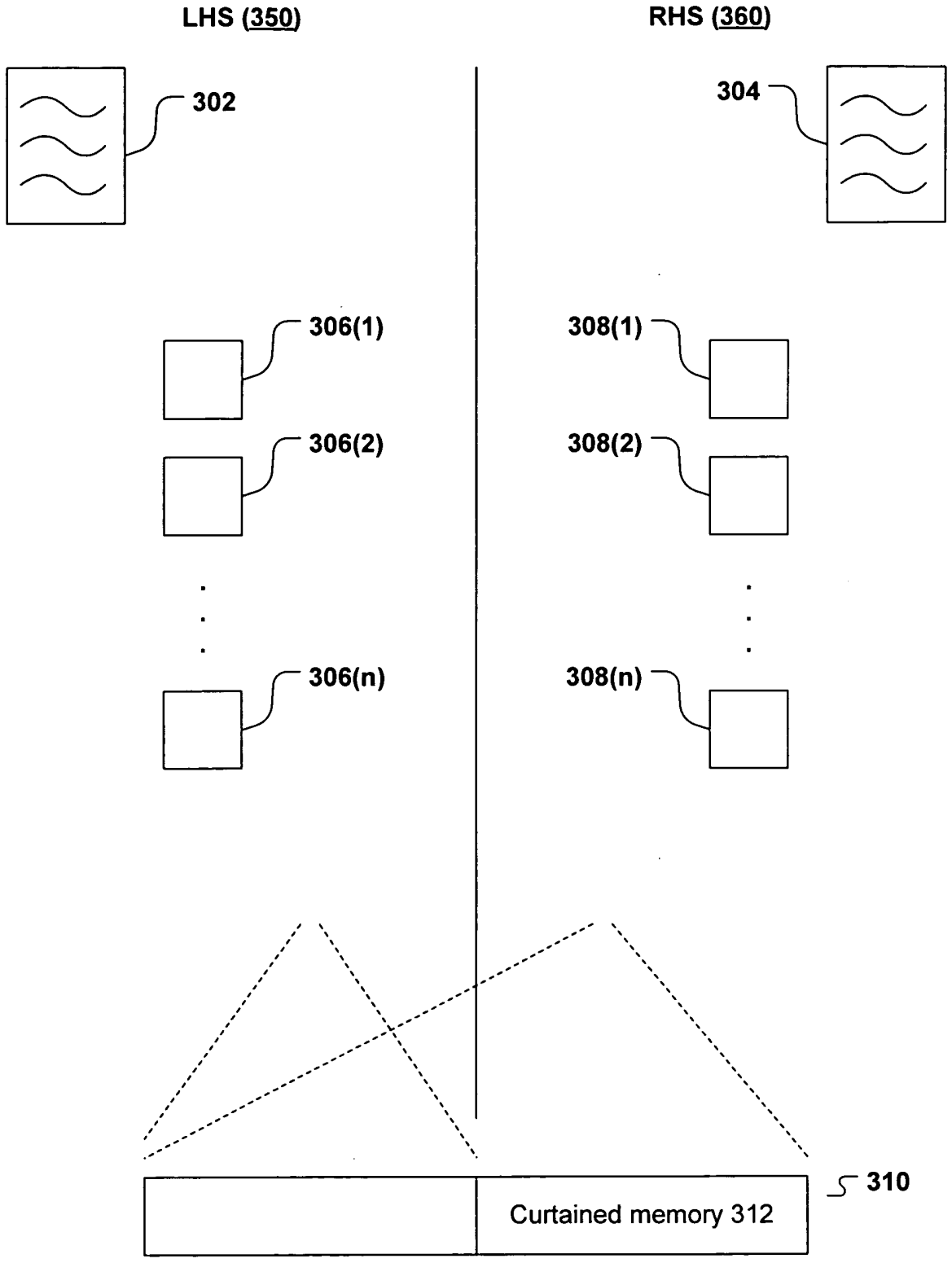
LHS (350)
RHS (360)
302
304
306(1)
306(2)
306(n)
308(1)
308(2)
308(n)
Curtained memory 312
310

FIG. 3

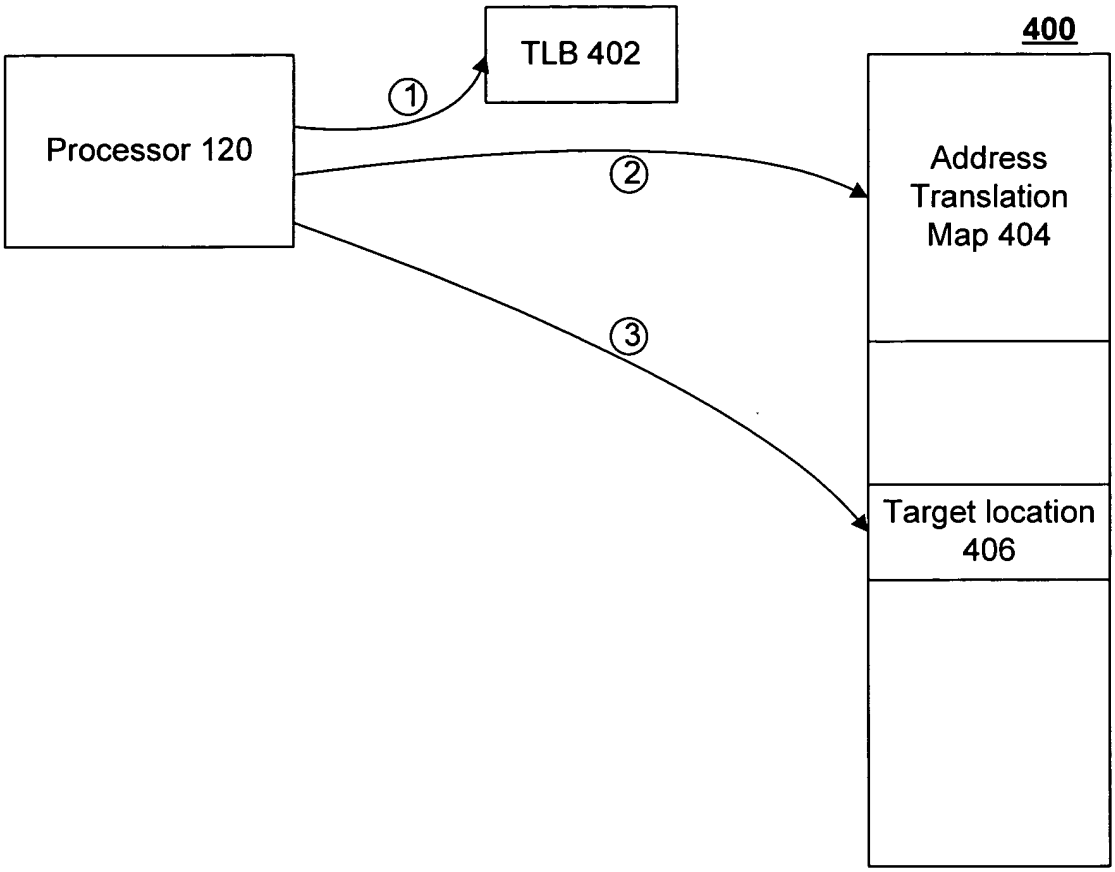
400
TLB 402
Processor 120
1
2
3
Address Translation Map 404
Target location 406

FIG. 4

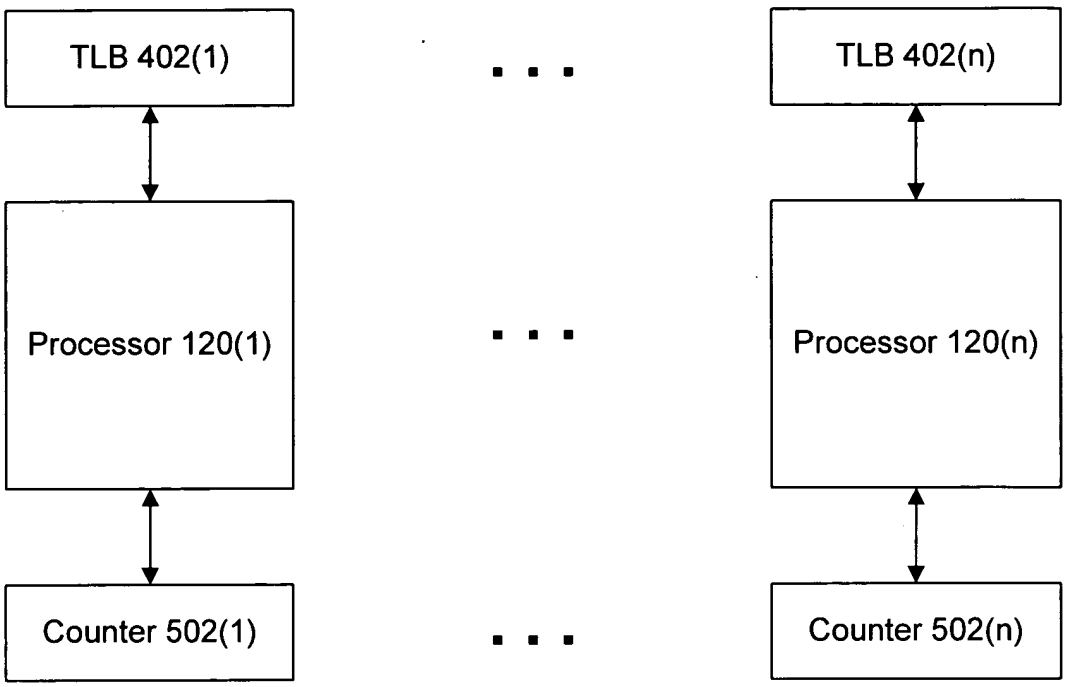
TLB 402(1)
TLB 402(n)
Processor 120(1)
Processor 120(n)
Counter 502(1)
Counter 502(n)

FIG. 5

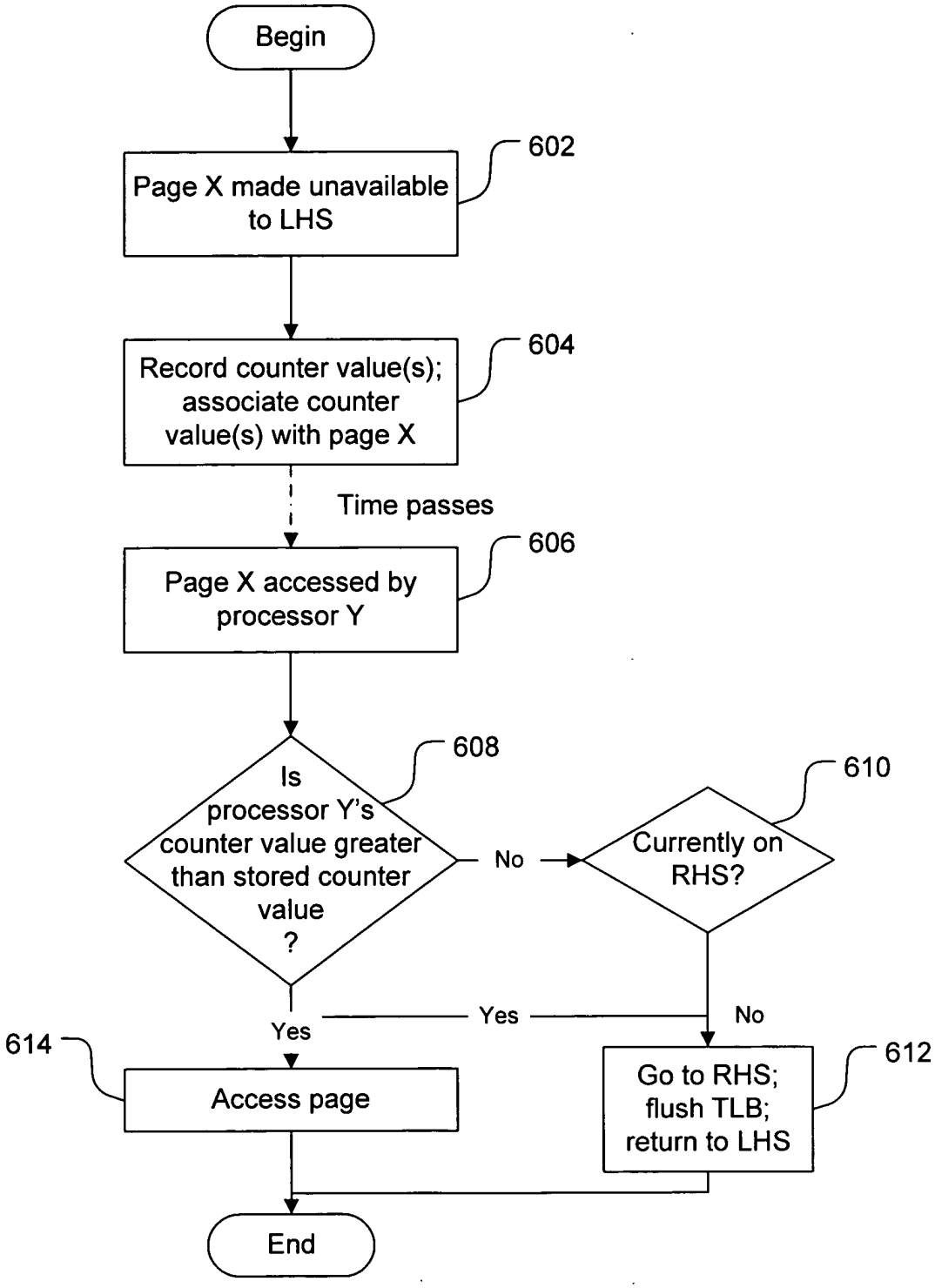
Begin
Page X made unavailable to LHS
602
Record counter value(s); associate counter value(s) with page X
604
Time passes
Page X accessed by processor Y
606
Is processor Y's counter value greater than stored counter value ?
608
No
Currently on RHS?
610
Yes
Yes
No
614
Access page
Go to RHS; flush TLB; return to LHS
612
End

FIG. 6